

REMARKS

In the Office Action, claims 1-25 were rejected. All pending claims are believed to be clearly allowable. Reconsideration and allowance of all pending claims are requested.

Claim modifications

By the present response, certain amendments have been made to claims 2-25. The changes include change of article 'a' to article 'the', and, corrections to punctuation.

Rejections Under 35 U.S.C. § 103

Independent claims 1, 13 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Arz et al. (U.S. Patent 6,636,041, hereinafter "Arz"). Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Applicants respectfully assert that the present invention, as recited in independent claims 1, 13 and 17, is patentable over Arz.

Claim 1 and claims depending therefrom:

Claim 1 is clearly distinguishable from the teachings of Arz. In particular, Arz does not teach, disclose or suggest at least "passing a light through a non-magnetic optical fiber inserted in a *non-magnetic sheath* wound and cast with the electrical winding, the optical fiber having a core containing at least a first Bragg grating etched therein", as recited in claim 1.

In particular, Applicants disclose within the specification that the use of a *non-magnetic sheath* is to isolate the optic fiber from any influence of external deformations other than that due to temperature. This is made clear in the following excerpt of paragraph [0019]:

Because optical fiber 14 is free to slide inside sheath 40, it is essentially isolated from stresses that deform electromagnetic coil assembly 12, so that Bragg gratings 20 in optical fiber 14 are essentially unaffected by such stresses.

This structure is illustrated in FIG. 1 in which, sheath 40 is shown to be providing protective covering for the inner optic fiber and the Bragg grating assembly.

In stark contrast, Arz does not provide a sheath for isolating the deformation resulting from sensed temperature from the deformation due to oscillation.

Furthermore, Arz actually acknowledges that *temperature cannot be sensed by the Bragg gratings alone*. The requirement for *completely separate temperature sensors*, as acknowledged by Arz, is to isolate the deformation resulting from sensed temperature from the deformation due to oscillation.

In particular, as set forth in column 6 of Arz:

For optimal surface-coverage and comprehensive deformation acquisition of the gradient coil system 21, the optical fibers LF 10, LF 20 and LF 30, in particular, are arranged surface-proximate at an inside as well as at an outside hollow cylinder surface in one embodiment and exhibit a corresponding density of Bragg gratings BG 11 through BG 38. A correspondingly high-resolution acquisition of deformations of the gradient coil system 21 is thus possible. *In a supplementary embodiment, at least one temperature sensor is arranged within the gradient coil system 21 for acquiring an operating temperature of the gradient coil system 21, particularly of the optical fibers LF 10, LF 20, LF 30 and LF 40, and is connected to the operating device 51 for the communication of acquired operating temperatures. As a result, the operating device 51 is able to separate deformations produced due to variations of the operating temperature, for example as a result of a flow of current within the gradient and/or shielding coils, from deformations as a consequence of oscillations of the gradient coil system 21.* Arz, col. 6, lines 11-30.

Thus, Arz does not specifically teach, disclose, suggest, or show a non-magnetic sheath to isolate deformations due to sensed temperature from other deformations due to external influences. Anz, then, does not support a *prima facie* case of obviousness of claim 1. It is respectfully requested that the rejection of claim 1 and its dependent claims under 35 U.S.C. §103(a) be withdrawn.

Claim 13 and claims depending therefrom:

Claim 13, like claim 1, recites the use of a non-magnetic sheath that, again, serves to isolate deformations due to sensed temperature from other deformations due to external influences. As noted above, Arz does not provide a sheath for isolating the deformation resulting from sensed temperature from the deformation due to oscillation, and, recognizes that separate temperature sensors are required to sense temperature.

Therefore, Arz does not support a *prima facie* case of obviousness of claim 13. It is respectfully requested that the rejection of claim 13 and its dependent claims under 35 U.S.C. §103(a) be withdrawn.

Claim 17 and claims depending therefrom:

Claim 17, like claim 1, recites a non-magnetic sheath that, as discussed above, isolates deformations due to sensed temperature from other deformations due to external influences. As noted above, Arz does not provide a sheath for isolating the deformation resulting from sensed temperature from the deformation due to oscillation. Furthermore, Arz recognizes that separate temperature sensors are required to sense temperature.

Here again, Arz does support a *prima facie* case of obviousness of claim 17. Thus, it is respectfully requested that the rejection of claim 17 and the claims depending therefrom under 35 U.S.C. §103(a) be withdrawn.

Other rejections Under 35 U.S.C. §103

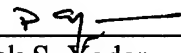
Applicants note that certain of the dependent claims were rejected in view of Arz in combination with secondary references. The references have been reviewed and do not obviate the deficiencies of Arz, particularly regarding the sheath for separating thermal and mechanical effects on the optical fiber. Consequently, all of the dependent claims are believed to be patentable both for the subject matter they separately recite, as well as by virtue of their dependency from an allowable base claim.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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